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(54) Title: MITRAL AND TRICUSPID VALVE REPAIR			
(57) Abstract			
<p>A novel approach to mitral or tricuspid valve repair involves the performance of an edge-to-edge fastening/securing of opposing heart valve leaflets (122, 124) through a catheter (126) entering the heart. Thus, a device is introduced including a leaflet fastener applicator through a cardiac catheter (126) or other suitable catheter. The leaflet fastener applicator and cardiac catheter (126) can be formed into a kit. A gripper (402) can be used to hold the heart valve leaflets (122, 124) while they are fastened.</p>			

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 99/14063

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61B17/068 A61B17/064

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 07375 A (COLUMBIA UNIVERSITY) 26 February 1998 (1998-02-26) page 3, line 30 -page 4, line 34 ---	1,3,10, 21,23
X	US 5 423 858 A (BOLANOS) 13 June 1995 (1995-06-13) figures 9,10 ---	31,32
A	---	2
P,X	WO 98 30153 A (ELECTIVE VASCULAR) 16 July 1998 (1998-07-16) figure 8 ---	31
A	WO 97 39688 A (VNUS) 30 October 1997 (1997-10-30) ---	
A	EP 0 684 012 A (KARLSRUHE) 29 November 1995 (1995-11-29) ---	
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

8 October 1999

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/14063

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 042 707 A (TAHERI) 27 August 1991 (1991-08-27) -----	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 99/ 14063

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 11-20
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(iv) PCT - Method for treatment of the human or animal body
by surgery
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such
an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all
searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment
of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report
covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is
restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-3,10,21,23,31,32

Valve leaflet fastener with opposing jaws adapted for holding the components of a two-part fastener and the target leaflets

2. Claims: 1,4

Leaflet fastener with suture as fastener material

3. Claims: 1,5,25-27

Valve fastener with sets of opposing arms

4. Claims: 1,6

Ring shaped valve leaflet fastener

5. Claims: 1,7,35

Two part button valve leaflet fastener with spikes, and an applicator adapted to a similarly defined fastener

6. Claims: 1,8,9,21,24

Valve leaflet fastener with a separate mechanical or suction gripper;

7. Claims: 21,22

Valve leaflet fastener with suture as actuator element;

8. Claims: 28-30

Single shaft gripper/fastener applicator

9. Claims: 33,34

Valve leaflet gripper with plunger action

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/14063

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9807375 A	26-02-1998	AU 4082497 A	06-03-1998
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